

CLAIMS

1. A body and frame assembly for a vehicle comprising a one-piece inner member mated with a one-piece outer member, said members defining door openings for opposing sides of the vehicle.

2. The body and frame assembly of claim 1, wherein the inner member includes an inner roof panel portion having opposite ends, a first inner side frame portion at one end and a second inner side frame portion at the opposed end, wherein said inner side frame portions extend generally downward from the inner roof panel portion;

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wherein the outer member includes an outer roof panel portion having opposite ends, a first outer side frame portion at one end and a second outer side frame portion at the opposed end, wherein said outer side frame portions extend generally downward from the outer roof panel portion;

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wherein said first inner and first outer side frame portions substantially define at least one door opening and said second inner and second outer side frame portions substantially define at least one other door opening; and

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wherein the inner member and the outer member are joined as an assembly.

3. The body and frame assembly of claim 2, wherein said first inner and first outer side frame portions substantially define at least two door openings and said second inner and second outer side frame portions substantially define at least two other door openings.

4. The body and frame assembly of claim 2, wherein each of the inner and the outer side frame portions forms a door ring having an unbroken ring shape.

5. The body and frame assembly of claim 2, wherein the inner and outer side frame portions each include a plurality of pillar portions and rocker portions, wherein the pillar portions are disposed between and connect the roof panel portions and the rocker portions.

6. The body and frame assembly of claim 5, wherein the plurality of pillar portions includes at least one of an A-pillar, B-pillar and a C-pillar.

7. The body frame and assembly of claim 2, wherein the inner roof panel is characterized by formations configured to provide structural rigidity.

8. The body and frame assembly of claim 1, wherein the inner and  
5 outer members define holes for at least one of door hinges, wiring and trim components.

9. The body and frame assembly of claim 1, wherein the inner member is formed from a single first rigid sheet and the outer member is formed from a single second rigid sheet.

10. The body and frame assembly of claim 9, wherein said first and second sheets are aluminum.

11. The body and frame assembly of claim 1, wherein at least one of the inner member and outer member is formed by quick plastic forming.

12. The body and frame assembly of claim 1, wherein at least one of the inner member and the outer member is formed by super plastic forming.

13. The body and frame assembly of claim 1, wherein at least one of the inner member and the outer member is formed by sheet hydroforming.

14. The body and frame assembly of claim 1, wherein the inner member and the outer member are joined at least partially by hemming.

15. The body and frame assembly of claim 1, wherein the inner member and the outer member are joined at least partially by welding.

16. The body and frame assembly of claim 1, wherein the inner member and the outer member are joined at least partially by bonding.

17. The body and frame assembly of claim 1, wherein the inner member and the outer member are aluminum.

18. The body and frame assembly of claim 1, wherein the inner member has an outer face and the inner member and the outer member are sufficiently contiguous and coextensive with each other such that the outer member substantially covers the outer face of the inner member.

19. A body and frame assembly for a vehicle comprising:

an integral inner member including an inner roof panel portion having opposite ends, a first inner side frame portion at one end and a second inner side frame

- 5 portion at the opposed end, wherein said inner side frame portions extend generally downward from the inner roof panel portion; and

an integral outer member matable with the inner member including an outer roof panel portion having opposite ends, a first outer side frame portion at one  
10 end and a second outer side frame portion at the opposed end, wherein said outer side frame portions extend generally downward from the outer roof panel portion;

wherein said first inner and first outer side frame portions substantially define at least one door opening and said second inner and second outer side frame  
15 portions substantially define at least one other door opening; and

wherein the inner member and the outer member are joined as an assembly.

20. A method of assembling a vehicle, the method comprising:

forming a one-piece inner member;

5 forming a one-piece outer member matable with the inner member; and

mounting the inner and outer members to each other such that the inner and outer members define door openings at opposing sides of the vehicle.

21. The method of assembling a vehicle of claim 20, wherein the inner member includes an inner roof panel portion having opposite ends, a first inner side frame portion at one end and a second inner side frame portion at the opposed end,

- and wherein said forming is by a method selected from the group consisting of quick  
5 plastic forming, super plastic forming and hydroforming;

- wherein the outer member includes an outer roof panel portion having  
opposite ends, a first outer side frame portion at one end and a second outer side frame  
portion at the opposed end, and wherein said forming is by a method selected from the  
10 group consisting of quick plastic forming, super plastic forming and hydroforming; and

further comprising:

- bending the inner member such that the inner side frame portions extend  
15 generally downward from the inner roof panel portion; and

bending the outer member such that the outer side frame portions extend  
generally downward from the outer roof panel portion.

22. The method of claim 20, wherein said mounting is such that the  
outer member substantially covers the inner member and the inner member and the  
outer member are joined as an assembly.

23. The method of claim 20, further comprising trimming the inner  
member.

24. The method of claim 20, further comprising trimming the outer  
member.

25. The method of claim 20, further comprising modifying the inner  
member such that it defines holes for door hinges, wiring and trim components.

26. The method of claim 20, further comprising modifying the outer  
5 member such that it defines holes for door hinges, wiring and trim components.

27. The method of claim 20, further comprising mounting the joined  
inner and outer members to a vehicle chassis to at least partially define a vehicle  
passenger compartment.

28. The method of claim 20, further comprising:  
  
providing a body and frame assembly, wherein the body and frame  
assembly includes a one-piece inner member and a one-piece outer member matable  
5 with the inner member, and wherein said inner and outer members define door  
openings at opposing sides of the vehicle.